Biodiversity Reconnaissance Survey

Maymai District

Darwaz Region, Badakhshan Province, Afghanistan

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Cover photo:

Amu Darya River running through Maymai District.

All photographs by Z. Moheb unless otherwise mentioned.

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Introduction

Afghanistan has been marred by conflict for three decades and therefore very little wildlife research has been done since the 1970s. Most places around the country remain unexplored by biologists, and as a result the current status of most species and their habitats remains unknown. Not only is little known, but also there are very few organizations – government and non-government – focused on wildlife conservation.

The Wildlife Conservation Society (WCS) is arguably the most active non-government organization focused on field conservation in the country. Among WCS's areas of interest is Badakhshan Province. With funding support from USAID (the United States Agency for International Development) WCS has been conducting biodiversity reconnaissance surveys across northern Badakhshan. This area was highlighted in an Afghanistan-wide "Priority Zone Analysis" that WCS carried out in 2008 on behalf of UNDP-GEF (United Nation Development Program-Global Environmental Facility; Kanderian et al. 2009). As a result a survey was carried out across Maymai District from June 21st to July 15th 2012.

Study Area

Maymai District

Maymai is the most remote and biologically unexplored part of northeast Afghanistan. Local communities do not recall wildlife surveys of any nature being carried out in the past; therefore this survey appears to represent the first ever of its kind, and as such, all results are the first formal records for the area.

Maymai is the northernmost district of Badakhshan and the easternmost district of Darwaz Region. It shares a border with Tajikistan to the north and east. From the west and south it borders Nusai and Shighnan districts (Fig. 1). The total area of Maymai is around 1,400 square kilometres (AGCHO 2005). There is no official district capital. In the 1990s when the Darwaz Region was split into five districts and Maymai was formed, the district capital had been placed in Jamarch-e Bala village, which is geographically located in the middle of the district. However, at the time of our biodiversity survey the district office was located in the western part of the district, in Maymai village. People from the western half of the district call the area "Maymai District" whereas the communities from the eastern half of the district call it "Darwaz-e Bala District." These have remained big issues among the local communities from the east and western side of the district. For the purpose of this report we are calling it "Maymai District" or simply "Maymai."

Maymai contains ten village clusters consisting of thirty Community Development Councils (CDC). According to the district office (2009 census), Maymai holds a human population of 27,588 with 2,658 households and 5,980 families. Inhabitants are ethnic Tajik and belong to Sunni and Ismaili sects.

Figure 1: Location of the study area within the Darwaz Region

The area is isolated mostly due to a lack of road connections to link it with other parts of the country. The only existing road is in poor condition; it goes through Shighnan District and reaches up to the southeast border of the Maymai District. The Amu Darya River and rockslides continually threaten and undermine this road (Figure 2). Further on past this road there are only walking tracks connecting villages with each other. However, road construction projects were in progress in many places at the time of our survey.

Figure 2: Amu Darya River threatening the road connecting to Maymai District

Maymai imports supplies via two main routes: The western villages get their supplies from Nusai District, which is connected with Tajikistan via a bridge, whereas the eastern villages get their supplies from Shighnan District. However, the Agha Khan Foundation (AKF) has built a bridge across the Amu Darya River at Jamarch-e Bala village, which connects Maymai to Tajikistan; but this bridge has not been yet been formally inaugurated and so is not yet heavily used.

Maymai consists of several main valleys and numerous sub-valleys that drain into the Amu Darya River. Despite having plentiful supplies of freshwater, almost no investments have been made in irrigation to use the water for agriculture. People do, however, use the streams to generate small-scale hydroelectricity for their own use. Most households that have access to streams have installed a hydropower unit using their own funds.

Survey Area

The survey team covered a strip of land extending from Tangshew Valley, north around the upper part of Darwaz to Rezwi village in the west (UTM Zone 42 676041/ 708345N and 4196869 to 4257842E) – see Figure 1.

Elevation across the survey area varied from 1,430-1,750 m ASL along the Amu Darya River to 2,060-2,730 m ASL in the high-elevation upper valleys. There are around 10 valleys all draining into the Amu Darya River. Topography and proximity to freshwater influences village distribution throughout the study area. Most villages are scattered along the major valleys and the Amu Darya River.

Maymai is a mountainous area with highly varied topography. The mountains become very steep with high cliffs along the Amu Darya River in the southeast part of the district, and the gradient becomes more gradual and cliffs disappear in some places along the Amu Darya River in the western end of the district. The mouths of valleys draining into the Amu Darya River are generally narrow with steep-sided cliffs, and deeper inside the valleys the land becomes wider with scree and more gentle rolling slopes (Figure 3). Generally, the lower reaches of valleys hold arable land, while grasslands are found in the upper areas, and snow is found on the mountain peaks.

Figure 3: Topographic structure of the valleys within the study area

Goal and Objectives

The goal of the survey was to determine the presence and absence of large mammals and birds in the Maymai District and the main threats they face.

Main objectives:

1. An initial assessment of presence/absence of the large mammals and birds across the survey area, with particular attention to markhor (*Capra falconeri*).
2. An understanding of local perceptions and threats to wildlife and other natural resources.
3. An assessment of the value and suitability of the survey are for further conservation intervention.
4. Government counterparts (from MAIL) trained in survey methods and field skills.

Methodology

The survey was carried out from June 21st to July 15th 2012, including six days travel to/from the study area. The survey team consisted of Zalmai Moheb and Said Naqibullah Mostafawi from WCS, Mr. Mohammad Ajmal (Forestry Department, MAIL, Faizabad) and Mr. Shirinullah (District Forestry Officer and our appointed field guide). The survey covered 27 villages (Figure 4, Appendix 1).

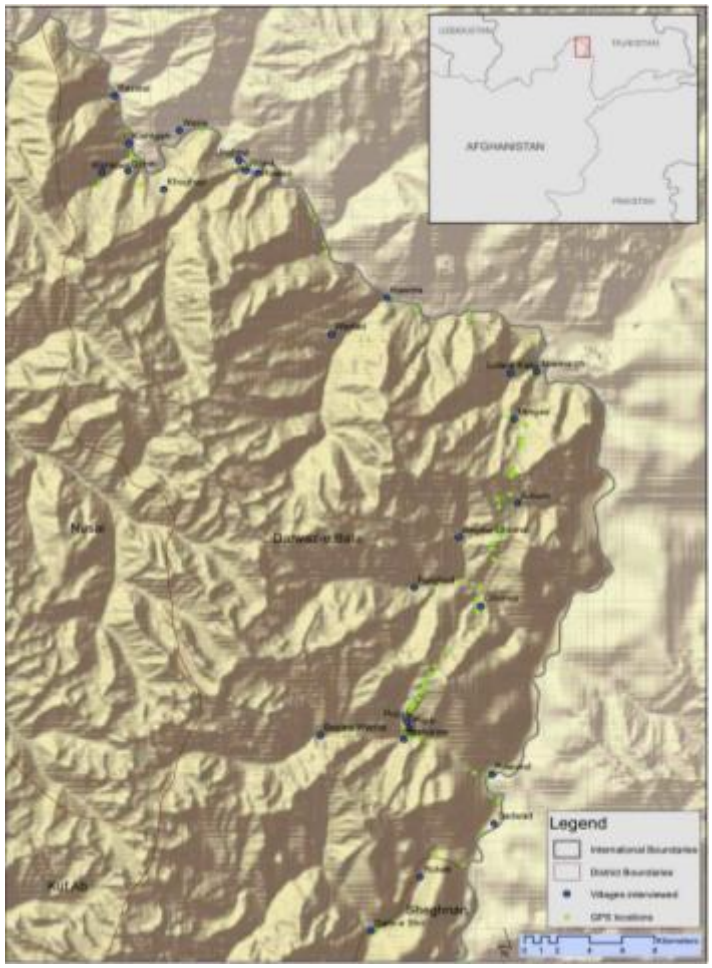

Figure 4: Location of the villages that were covered in this survey

This survey consisted entirely of village-based activities. Besides holding meetings and interviews with local people (including government officials), we made efforts to raise public awareness about the importance of wildlife conservation for the region and for Afghanistan. We did not conduct any formal field surveys during this mission due to security concerns; however, we still recorded any wildlife encountered.

While meeting and interviewing people we inquired about the status of various large mammal species. We focused the interviews on the village headman ("Arbob"), village elders, hunters, and shepherds, because they generally have good knowledge about wildlife, both past and present. For each interview we showed photographs of species that were known or suspected to have been historically present in the study area (Table 1). The photos helped the informants identify species and avoid confusion. Habibi's (2003) *Mammals of Afghanistan* also was used as a guide in this process. Additionally, besides showing photos of species known to Badakhshan, we also showed some that are not found in the area; this was done to check the knowledge and sincerity of each informant. During a similar survey last year, an informant from Nusai District, Darawz region, stated he had recently (in 2007) seen a tiger skin in Maymai District (Moheb and Mostafawi 2012); therefore in this survey we added a tiger photo to our gallery.

Table 1: Species photos shown during Maymai survey

No.	Common Name	Scientific Name	Historical range in the study area	
			Yes	No
1	Asiatic Cheetah	*Acinonyx jubatus*		√
2	Persian Leopard	*Panthera pardus saxicolor*	√	
3	Snow Leopard	*Panthera uncia*	√	
4	Tiger	*Panthera tigris*	?	?
5	Jungle Cat	*Felis chaus*		√
6	Leopard Cat	*Prionailurus bengalensis*	√	
7	Pallas Cat	*Otocolobus manul*	√	
8	Wild Cat	*Felis lybica*		√
9	Eurasian Lynx	*Lynx lynx*	√	
10	Striped Hyena	*Hyaena hyaena*		√
11	Wolf	*Canis lupus*	√	
12	Jackal	*Canis aureus*		√
13	Red Fox	*Vulpes vulpes*	√	
14	Brown Bear	*Ursus arctos*	√	
15	Asiatic Black Bear	*Ursus thibetanus*		√
16	Polar Bear	*Ursus maritimus*		√
17	Siberian Ibex	*Capra sibirica*	√	
18	Markhor	*Capra falconeri*	√	
19	Urial	*Ovis orientalis*	√	
20	Long-tailed Marmot	*Marmota caudata*	√	

Interviews

Conducting interviews with villagers comprised a large part of the overall survey. The survey team interviewed an average of three people per village. In total the team carried out 99 interviews across 27 villages. The survey team followed the same interview technique as used by Moheb & Mostafawi (2011 and 2012) in Shahr-e Buzurg, Kofab, Shukai and Nusai districts in northern Badakhshan. Informal interviews (Appendix 2) were undertaken and notes written up after the respondent had departed. However, a datasheet was also used to quickly record presence/absence of species (Table 1), to which people interviewed did not show any sensitivity.

Public Awareness

During the survey we also tried to educate the local communities about the importance of their wildlife and the ways in which they can draw benefits by conserving these resources. We explained the importance of natural resources and the achievements being made in Wakhan District and Band-e-Amir National Park. We also provided information about conservation programs occurring in Tajikistan and other places, and the participation of the local communities in those areas.

Results

During our travels across the survey area, the most common taxa we encountered were birds and lizards. We also received reports that tiger was present in the past (range given 2-20 years), however, the reliability of these claims is questionable. Of most interest, a few informants stated that tiger still exists in very low numbers. Other notable records from the survey were observations of the poorly known agama species, *Laudakia badakhshana*.

In the course of the 19 days of surveying the team observed red fox, marmots, bats (spp. unknown), 102 species of birds (Appendix 3); 8 to 10 species of lizard, including Badakhshan Agama (*Laudakia badakhshana*); snakes, and toads. The team also recorded indirect field evidence of ibex, porcupine, marmot, and snakes.

During the interviews, informants reported the occurrence of nearly 25 mammalian species in total for the study area (Table 2); this does not include bats and other small mammalian species.

Table 2: Status of wildlife in Maymai according to interviews conducted

No.	Animals	Number and percentage of the informants reporting the status of the species as:						Type of Record
		Present		Locally extinct		Not present		
		No.	%	No.	%	No.	%	
1	Persian Leopard	20	20.2	6	6.1	73	73.7	2
2	Snow Leopard	41	41.4	2	2.0	56	56.6	2
3	Tiger	10	10.1	11	11.1	78	78.8	2
4	Jungle Cat	16	16.2	0	0.0	83	83.8	2

5	Leopard Cat	5	5.1	0	0.0	94	94.9	2
6	Pallas Cat	4	4.0	0	0.0	95	96.0	2
7	Eurasian Lynx	15	15.2	0	0.0	84	84.8	2
8	Striped Hyena	0	0.0	0	0.0	99	100.	
9	Wolf	85	85.9	0	0.0	14	14.1	2 & 4
10	Jackal	15	15.2	0	0.0	84	84.8	2
11	Red Fox	88	88.9	0	0.0	11	11.1	1, 2 & 3
12	Brown Bear	64	64.6	0	0.0	35	35.4	2
13	Asiatic Black Bear	6	6.1	0	0.0	93	93.9	2
14	Common Otter	17	17.2	0	0.0	82	82.8	2
15	Stone Marten	42	42.4	0	0.0	57	57.6	2
16	Eurasian Badger	37	37.4	0	0.0	62	62.6	2
17	Ermine	8	8.1	0	0.0	91	91.9	2
18	Siberian Ibex	89	89.9	0	0.0	10	10.1	2 & 3
19	Markhor	0	0.0	1	1.0	98	99.0	2
20	Urial	3	3.0	0	0.0	96	96.0	2
21	Wild Boar	9	9.1	0	0.0	90	90.9	2
22	Long-tailed	69	69.7	0	0.0	30	30.3	1, 2 & 3
23	Porcupine	32	32.3	0	0.0	67	67.7	2 & 3
24	Hare	79	79.8	0	0.0	20	20.2	2

Types of Record:

1 = Direct observation of the animal in the field

2 = Presence of the animal reported by the respondents

3 = Indirect field evidence (track, scat, etc) recorded in the field

4 = Body parts/products kept by local people

Similar to the other parts of Darwaz (Moheb and Mostafawi 2012), in Maymai District there appears to be a very high level of hunting pressure on wild ungulates and selected bird species, which is likely to be a major contributing factor to the significant decline in numbers of these animals reported almost universally by those interviewed. Ibex seems to be the only wild ungulate present in the area, and it appeared to be under significant threat of extinction due to hunting. Also as with other parts of Darwaz, as reported by Moheb et al. (2012), brown bear in Maymai District seems to be threatened primarily by retaliatory killing. Among the birds, chukar partridges appear to be the most intensively hunted species in the area.

Mammals

Markhor (*Capra falconeri*)

Markhor was completely unknown to the people we interviewed. According to respondents, markhor is not distributed in Maymai. Only one out of 99 respondents – a man who is a famous hunter in the area – stated that markhor is present in the area; however, he said it is very sparsely distributed. He also stated that in the past markhor would enter the study area from Tajikistan, but that now this does not happen. Based on the interviews we conducted, we believe it is likely that this species is locally extinct.

Siberian ibex (*Capra sibirica*)

Siberian ibex is the only wild goat that is familiar to the local people and appears to be widely distributed across the survey area. We believe this because of the 99 people interviewed, 89 reported the presence of this species in the area. Respondents stated that ibex was once very abundant, but is now sparsely distributed and its numbers have decreased significantly. Aside from these reports, we found skins and horns in some villages (Figure 5). The species was reported to be heavily hunted. Coincidentally, the survey team arrived in Ghumai Valley where two ibex had been just hunted by a local person. Interestingly, we did not get a chance to interview the hunter because he avoided us.

Figure 5: Horns and skin of ibex that were shown to us in different villages

Urial (*Ovis orientalis*)
Urial is very poorly known by people in the study area. Only 3 of the 99 respondents reported the presence of the species; 96 respondents stated that the species never occurred there.

Wild boar (*Sus scrofa*)
Wild boar was only reported from the western end of the district, close to the Nusai District (Figure 1). Nine out of 99 respondents, mostly from Rizwai village (bordering Nusai District), reported the presence of this species. Wild boar appears to occur close to the Amu Darya River. The species is known to destroy agricultural crops in Nusai District (Moheb and Mostafawi 2012) and the same was reported to us in Maymai. Meat from wild boar is considered "haram" in Islamic societies and therefore people do not hunt the species for food. Respondents said that they chase wild boar when they see it raiding their crops.

Brown Bear (*Ursus arctos*)
Brown bear is well known in the area. Seventy out of 99 respondents reported its presence in the district. Among those 70 respondents, 64 people believed the species is brown bear (*Ursus arctos*), 4 people claimed the presence of both brown bear and Asiatic black bear (*Ursus thibetanus*), and a further 2 respondents stated that the species is Asiatic black bear. We could not find any evidence to prove that Asiatic black bear exists in the area, however.

Brown bear was well known for its predation of cattle in some parts of Maymai. We found the same story in Nusai District – to the west of Maymai – during a survey in 2012 (Moheb et al. 2012). According to the people who reported this matter, most attacks are carried out by female brown bears, apparently because females usually have young and need to predate cattle in order to survive.

Two people claimed that brown bears even occasionally attack humans. Supporting this claim, one person we met had scars on his head (Figure 6) said to be caused by a brown bear attack while he collected fuel wood. According to another person, a man from west of Maymai very recently sustained serious injuries from a brown bear attack and was admitted to Nusai District Hospital for several days. We were not able to meet this person to verify this, however, having considered all the facts related to us, we judged the report to be reliable.

All people we interviewed felt that the bear population has decreased in recent years and the species is now sparsely distributed.

Figure 6: Old facial scars on a man who had allegedly been attacked by a brown bear

Snow Leopard (*Panthera uncia*) and Persian Leopard (*Panthera pardus*)

Two types of leopards were reported to be present in Maymai: "khar palang" or snow leopard (*Panthera uncia*), and "shir palang" or Persian leopard (*Panthera pardus*). Although both species were said to be scarce in the area, respondents stated that "shir palang" (Persian leopard) is least abundant.

Mr. Baz Mohammad, head of the Dara-e Shir CDC, described both species in the following way: "Khar palang is small bodied with thick fur, a large head, thick tail and round black spots on the body; Shir Palang is a bigger animal with short, smooth fur, a smaller head and narrow tail, and a coat of black spots on light yellow background."

Forty-one out of 99 respondents reported the presence of snow leopard in the area. However, two respondents stated that the species is now extinct. Similarly, 20 respondents believed Persian leopard is present, whereas another 6 stated that it is now extinct.

Although people complained about depredation by leopards, only one respondent (from Jamarch village) reported a recent depredation event. He stated that "5 days ago" (in June 2012) a leopard killed 6 of his livestock; however, he was not able to show any clear evidence to the survey team.

Nine people reported retaliatory killing of leopard spp. in the past (>10 years). Two respondents told a story about a leopard that was stuck inside a corral after attacking livestock. The owner of the corral tried to kill the leopard with the help of his dog, but it escaped the corral and climbed a nearby walnut tree. It was then shot. Local people described the species as a good tree climber.

Tiger (*Panthera tigris*)
Eleven out of 99 respondents reported that tiger is extinct from their area. However, another 10 respondents stated that the "big yellow striped palang" (the tiger) still exists in the area, but that it is very rare. The only recent reported evidence of the species was a story about a year ago. Mr. Dada, a local inhabitant from Ghumai Valley was involved. The story is as follows:

> *"Last year (2011) we (a group of 5 to 7 people) were coming from Amurn village to Ghumai Valley where we saw an injured tiger in an exposed cave along the Amu Darya River. It was feeding on a donkey carcass. The animal could not escape because the Amu River was on one side of it, and on the other side was us. We all threw stones at the animal. Suddenly Dada appeared and shouted that the tiger was his animal because he had wounded it the previous day and had been searching for it since. At that point we left the animal for Dada and continued on to Ghumai Valley. Dada killed the tiger and skinned it, but he was not able to sell the skin because he did not treat it correctly and it rotted".*

Interestingly, two other informants repeated this story in almost exactly the same fashion. The survey team tried to find and interview Mr. Dada, but did not locate him.

Except for the abovementioned reports, we did not find any evidence to confirm the presence of tiger in the area. However, these reports add weight to an alleged tiger skin seen by a local person from Nusai District in Maymai bazaar in 2007 (Moheb and Mostafawi 2012). Unfortunately we were also unable to substantiate this report. Furthermore, it is important to note that the tiger has been considered extinct in Afghanistan since the early 1970s, with the last report of a Caspian tiger footprint seen along the Amu Darya River in Darqad District dating back to 1967 (Habibi 2003). Until and unless there is clear and unequivocal proof, we continue to accept the position that that Caspian tiger is extinct.

Other cat spp.
Eurasian lynx (*Lynx lynx*) was poorly known by the people we interviewed. Fifteen respondents said the species was present. Only one depredation event by lynx was reported to us. According to the respondent, the incident occurred last year (2011) in Amurn village (a central area of the district) where a lynx had entered a corral and attacked sheep and goats, which finally resulted in retaliatory killing of the animal.

People we interviewed had difficulty identifying other species of small cat we showed them, such as jungle cat (*Felis chaus*), leopard cat (*Prionailurus bengalensis*), wildcat (*Felis lybica*) and Pallas cat (*Otocolobus manul*). However, 16, 5 and 4 respondents reported the presence of these species respectively. In total, 25 out of 99 people interviewed reported the presence of small cat species in the study area. Further work is needed to determine which, if any, of these species actually exist.

Canids
Wolf (*Canis lupus*) and red fox (*Vulpes vulpes*) were well known among the people we interviewed, with 85 and 88 of the total 99 interviews claiming their presence respectively. Only fifteen people from the 99 interviews claimed golden jackal (*Canis aureus*) was present. Some of these respondents stated that it is difficult to see jackal, but sometimes it is heard calling from nearby mountains.

Wolf was considered a pest species throughout the area, being commonly known to attack livestock. One respondent from the eastern part of the study area stated that wolves sometimes attack their chickens. We were told by one person, "people in Maymai kill wolves because they are very harmful to us". Based on everything we heard, wolves are regularly killed. Aside from retaliatory killing, wolves are also targeted for their skins.

According to one local hunter who we spoke to, Mr. Noor Ali from Yarkh village, a wolf skin costs around 2,500 AFN (US$ 50) to buy from a local. In fact, when started to interview Mr. Noor Ali he mistakenly thought we were fur traders and presented a recently killed adult female wolf skin (Figure 7); he said the price for the fur was negotiable.

Figure 7: Skin of an adult female wolf that had been killed two months before the survey time

Eighty-eight out of the 99 respondents reported the presence of red fox throughout the study area. We even observed a dead fox that was allegedly killed in Jamarch village a day before our arrival (Figure 8). Red fox was reported to depredate poultry and is considered a pest.

Figure 8: Dead red fox showed to us in Jamarch village in the central part of the district

Birds

The survey the team observed 101 species of birds throughout the survey area. Maymai has a diverse array of habitats and many bird species breed there (Figure 9). During the survey our team recorded four new species for Badakhshan Province: variable wheatear (*Oenanthe picata)*, spotted flycatcher (*Muscicapa striata)*, eastern orphean warbler (*Sylvia crassirostris*) and Blyth's rosefinch (*Carpodacus grandis*).

As is common in other parts of Darwaz (Moheb & Mostafawi 2012), bird hunting is widespread in Maymai District. According to the people we interviewed, Himalayan snowcock (*Tetraogallus himalayensis*), chukar partridge (*Alectoris chukar*), hill pigeon, rock pigeon, doves, and quails are all heavily hunted.

Figure 9: Nest and eggs of the red-headed bunting (*Emberiza bruniceps*) in Maymai District (Photographed by S.N. Mostafawi)

Himalayan snowcock (*Tetraogallus himalayensis*)

Most of the people we interviewed stated that Himalayan snowcock is present and breeding in the study area. Local communities refer to it as "kabk-e Dari". Apparently the species is widely hunted. On one occasion, in Ghumai Valley, the survey team observed a snowcock being kept as a pet (Figure 10).

Figure 10: A pet Himalayan snowcock (*Tetraogallus himalayensis*) in Ghumai Valley (photographed by S.N. Mostafawi)

Chukar partridge (*Alectoris chukar*)

Our interviews indicated that chukar partridge is heavily hunted in Maymai. As with other districts of Darwaz, eggs and chicks of the species are collected for the pet trade. We observed the chukars caged as a pet and for fighting in 30% of the households we interviewed throughout the survey area (Figure 11). Hunting appears to be widespread as well.

During spring the local people collect chukar eggs and have their domestic chickens incubate them. In summer wild chukar chicks are captured live. The species is caught using a variety of techniques. One of the methods is called “buta”. This sees a tame chukar placed in the middle of a net trap. Its singing attracts a other chukars into the net to be trapped.

Another technique is called “nias”. It allows the hunter to capture large numbers of birds at one time and therefore poses the greatest threat to the overall population. During autumn, flocks of chukar come to specific places to find food and spend the cold season. At this time local hunters place mist nets close to mountain peaks and nearby rocky and wooded areas on known chukar migration routes. When a flock passes they get caught in the net and are collected by the hunter(s).

A third technique is called “roba gak”. This is where the hunter uses a wooden-framed cloth that is the same colour as the surrounding habitat. In the middle of the cloth the hunter puts a hole through which he can see. Using the cloth as a hide, the hunter slowly moves towards the chukars, and once he gets close enough he shoots the birds with a shotgun.

All these techniques appear to be widely practiced across Maymai.

Figure 11: A pet chukar partridge (*Alectoris chukar*) in Jamarch village

White-winged pied woodpecker (*Dendrocopos leucopterus*)
This species appears to be uncommon in Maymai; during the entire survey we only observed four individuals, all of which were in Ghumai Valley.

People do not appear to hunt this bird, mainly because it is small and offers little in the way of meat.

Vulture spp.
Maymai is a mountainous region and has good breeding habitat for vultures. We observed four vulture species during the survey: Egyptian vulture (*Neophron percnopterus*), griffon vulture (*Gyps fulvus*), bearded vulture (*Gypaetus barbatus*) and Himalayan vulture (*Gyps himalayensis*). We recorded a total of 87 vulture observations. The following were confirmed species observations: 11 Egyptian vulture, 9 griffon vulture, 3 bearded vulture and 4 Himalayan vulture.

European roller (*Coracias garrulous*)
We observed three individuals of this species during the survey. One of the individuals was observed entering and disappearing in a hole in a cliff, which suggest it may have been nesting there. Given that European roller breeding sites were recorded during previous WCS surveys conducted elsewhere in Badakhshan, it seems likely that this bird breeds in Maymai District as well.

Herpetofauna

All herpetofauna encountered during this survey were recorded. We recorded 17 lizards, 5 snakes, and 3 toad specimens.

Lizard spp.

The survey team observed >20 lizards among which 17 were properly photographed and georeferenced. Judging from the morphology of the lizards we photographed, we believe they may belong to 7-10 species that were unknown to us. However, one of the species was the poorly known Badakhshan agama (*Laudakia badakhshana*) (Figure 12). This lizard has also been recorded in the adjacent district of Nusai (Moheb & Mostafawi 2012). According to people we interviewed during this survey, lizards are abundant in the area and do not face any type of human threat.

Figure 12: Badakhshan agama (*Laudakia badakhshan*) photographed in the study area

Snake spp.

We observed five snake specimens (unknown sp.) throughout the survey. Three of these were observed on trails in different locations (UTM Zone 42 695522/4216591; 702508/4234378; and 690231/4215693) while we were walking between villages. The other two snakes were observed close to the campsite where we stayed in Pargaj and Kawika villages (UTM Zone 42 695522/4216591 and 694321/4243917 respectively). Among the five snake species we could only photograph one (Figure 13). The local communities believed that snakes are abundant. According to the informants, snakes are considered pests and are usually killed when encountered.

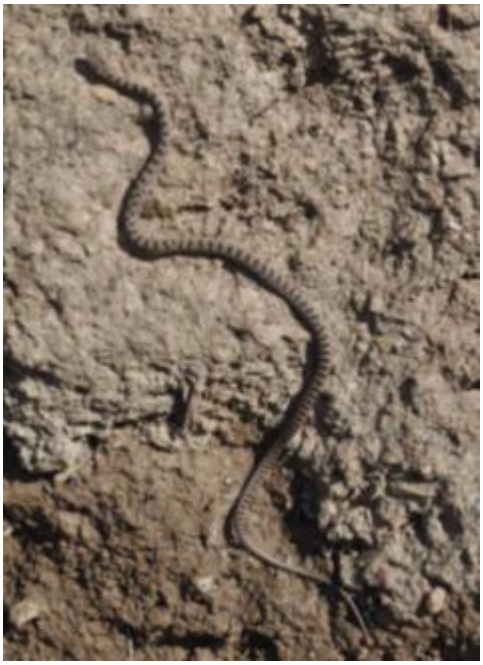

Figure 13: Snake observed by the team on the way to Jamarch village

Toads

The survey team observed three toad individuals throughout the survey (Figure 14). One of the toads (Figure 14a) was observed close to a stream, while the other two (Figures

14b and 14c) were observed in dry areas far away from water.

Figure 14: Toad spp. observed during the survey

Livestock

Similar to the other parts of Badakhshan, livestock are one of the major sources of livelihood for the communities in Maymai. Typical to the districts of Darwaz Region, there are less livestock in Maymai compared to other districts in Badakhshan, such as Wakhan and Zebak. The number of domestic goats are two-fold higher than what was reported for sheep and cattle. According to data given to us by Maymai District government, there are 15,388 domestic goats, 8,577 sheep, 6,686 cattle, 811 donkeys and 214 horses in Maymai District.

Remoteness and a lack of transport infrastructure result in a lack of mechanization across Maymai. Donkeys and horses are the main form of transportation, and cattle remain the main source of draft power for agriculture.

Sheep and goats are moved to different seasonal settlements year-round throughout some parts of the district. Cows are kept close to villages and summer settlements, and they are usually tended by women who milk them daily. Bulls on the other hand range freely in the hills and mountain areas, only being brought to the villages when needed for agriculture.

The survey team encountered at least two instances where domestic goats were badly infected with scabies (Figure 15). However, the people we interviewed reported their stock as suffering from a variety of illnesses, the symptoms of which we recorded in detail. After subsequent consultation with WCS veterinarians we concluded that they may have been suffering from the following diseases: foot-and-mouth disease,

contagious caprine pleuropneumonia, enterotoxaemia, bot fly, euferotoxine, heamorrhagic septecemia, black leg, liver fluke, pest dis petits ruminants, cycling disease, dictocalos and some other types of diseases for which they had different local names. However, exact diagnosis was not possible.

Predation rates of livestock by wild carnivores appear to differ from place to place. According to people we interviewed, wolves mostly prey upon small stock such as sheep and goats, whereas brown bears supposedly only attack cattle. As mentioned earlier, in some areas people complained about the high incidence of predation by brown bears on cattle.

According to the local people, severe cold and excess snowfall caused food shortages, which could result in around 60% mortality of livestock throughout most parts of Maymai District.

Figure 15: Domestic goats suffering badly from scabies

Forests and Pastures

The survey team did not observe any well-defined or substantial forest patches in the study area. However, very sparsely scattered juniper trees were visible on the tops of mountains on both sides of Tangshew Valley.
Most of the people we interviewed stated that there are good forest patches with significant numbers of wildlife at the headwaters of Tangshew Valley, but due to security reasons we could not visit this area.

People also stated that there are sparse juniper woodlands remaining on the tops of mountains far from villages. Even though these trees are very far from villages, people are still said to cut them. Indeed, a local man who had just cut a juniper tree was carrying it back to his home in Ghumai Valley (Figure 16 top). On a number of occasions we observed uprooted thorny shrubs that were being stored for winter use (Figure 16 bottom).

Figure 16: Wild trees and shrubs that had been cut down and stored for the winter heating

Unlike the forest, the pastures in Maymai are in very good condition. All the mountain slopes and foothills were full of greenery and very healthy-looking. Mountain slopes were blossoming with many varieties of flowering plants (Figure 17). In some areas the vegetation was so high that a goat could easily be hidden by the cover (Figure 17).

According to people we spoke to, the vegetation at the time of our survey was much healthier than in previous years. The locals believed that it may have been due to the severe previous winter which saw heavy rain and snowfalls (which according to reports caused around 60% livestock mortality). We photographed several plant species that are unknown to us.

Figure 17: Vegetation cover in the mountain foothills in Maymai

Discussion

Maymai is one of the most remote areas that we have surveyed thus far in Badakhshan. It appears to hold wildlife of conservation concern, particularly snow leopard and brown bear, and possibly Persian leopard. There were also reports that tiger still exists in the area, however, we found nothing to substantiate these claims, and further investigation is needed.

Most people we interviewed reported never having had researchers come to their community to study wildlife as we had done, and the concept of conservation was generally poorly understood. This appears largely due to a lack of public awareness about these issues. Yet although knowledge of conservation is limited, after listening to what we said about the issue the local people showed genuine interest in supporting natural resource management initiatives.

Local communities subsist on crops, animal husbandry and exploitation of their natural resources. Although the majority of them are generally aware of government bans on hunting, the practice continues. This is mostly due to poor law enforcement, lack of alternatives, and a lack of environmental education.

Conservation values and protected areas

During the survey of the study area we came across a wide variety of habitats starting from river bank and riparian habitats to gentle slopes followed by steep slopes and finally cliffs and snow peaks. These different habitat types could probably support a wide variety of wild species. Based on evidence we collected and hearsay from the people we interviewed, Tangshew Valley on the eastern side of the district is said to hold healthy populations of wildlife. Unfortunately due to security concerns we could not survey the entire area.

People also reported that ibex and leopard spp. are distributed throughout the district. Brown bear also appears to be widely distributed across the western half of the district. This is important because it seems to be a conflict zone where bears attack cattle. In response to these attacks it appears bears are often hunted and killed. This area therefore should be of conservation interest. More work is highly recommended.

Public Opinion

As mentioned earlier, people in most parts of Maymai have little knowledge about natural resource management and wildlife conservation. However, they were generally very attentive and enthusiastic when we explained the importance of these issues.

Security

Security was generally good; however in some parts, such as Tangshew Valley, it was not safe for us to travel. In the western part of the district construction projects belonging to the National Solidarity Program and others – mostly implemented by the Aga Khan Foundation (AKF) – were being implemented. These were generally places that have good security.

Access

There is currently no road connecting Maymai to the other parts of Badakhshan. However, during the survey we saw road construction projects underway (Figure 18). The local communities are very keen to build roads to the extent they even use their own labour and funds for them. Construction over difficult areas such as steep and rocky slopes and waterways requires donor and government assistance.

Figure 18: Road construction projects on the way to Maymai District

AKF has recently built a bridge across the Amu Darya River connecting Jamarch village – in the middle of the district – to Tajikistan. However, this bridge is not yet formally inaugurated. Once the inauguration occurs, the bridge will facilitate a shared market between Afghanistan and Tajikistan, known locally as "bazar-e mushtarak". This is a well-practiced form of trade in the border areas of Badakhshan, such as in Nusai, Shighnan and Ishkashim. These markets provide opportunities for Afghans to access goods from Tajikistan.

The bridge at Jamarch also helps connect Kunduz Province to Maymai via the Tajikistan Transit Highway. As a result, now local communities from the western parts of the Maymai can get their goods to the bazaar-e mushtarak in Nusai District.

Most government officers, students, high-ranking people and NGO workers enter Maymai from Tajikistan via this bridge, as it is the safest and most time-efficient way into Darwaz. The Tajik route is the only option for people travelling to Maymai when the walking trails are closed on the Afghan side, such as during the colder months.

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Appendices

Appendix 1: Name and location of the villages visited in this survey

No.	Village name	UTM-E	UTM-N	Elevation
1	Amurn	702363	4230674	2754
2	Barghud	696005	4225226	2522
3	Begaw Ghumai	698734	4228482	2560
4	Begaw Warow	690231	4215693	2739
5	Dara-e Shir	693337	4203083	1914
6	Ghumai	700082	4224024	2260
7	Jashtat	685189	4252788	1502
8	Jamarch	703528	4239166	1622
9	Kawida	694321	4243917	1542
10	Khughaz	680568	4250911	2069
11	Kishkiwn	676769	4251989	1940
12	Kishtgah	678427	4253874	1420
13	Lola-e Kabk	701912	4239074	1911
14	Mingad	702122	4236088	2338
15	Nisharaw	695342	4215425	2287
16	Ozbai	678364	4252098	1860
17	Pitab	695684	4216137	2497
18	Purgaj	695522	4216591	2725
19	Rawan	686414	4251937	1463
20	Rawand	700772	4213188	1728
21	Rezwai	677541	4256950	1431
22	Rutaw	696353	4206553	1877
23	Sadwad	700914	4209992	1767
24	Sarchishma			
25	Wand	685606	4252135	1507
26	Warfad			
27	Waris	681534	4254716	1440

Appendix 2: Questions asked during interviews

1. Wildlife presence/absence in the area.
2. Status of the wildlife species in the area, past and present?
3. (Showing photographs) Have you seen these animals in your area?
4. Any species those were present in the past but now gone.
5. Any species recently found in the area that were not present in the past.
6. Do you face any threat from wildlife? If yes, which species?

7. What do you think are the major threats to wildlife in your area?
8. Is there any disease your livestock suffer from?
9. What do you use as fuel wood for heating and cooking?

Appendix 3: List of bird species observed during the survey

No.	Common name	Scientific name
1	Little Grebe	*Tachybaptus ruficollis*
2	Mallard	*Anas platyrhynchos*
3	Common Teal	*Anas crecca*
4	Black Kite	*Milvus migrans migrans*
5	Eurasian Sparrowhawk	*Accipiter nisus*
6	Long-legged Buzzard	*Buteo rufinus*
7	Golden Eagle	*Aquila chrysaetos*
8	Griffon Vulture	*Gyps fulvus*
9	Himalayan Vulture	*Gyps himalayensis*
10	Egyptian Vulture	*Neophron percnopterus*
11	Bearded Vulture	*Gypaetus barbatus*
12	Western Marsh Harrier	*Circus aeruginosus*
13	Common Kestrel	*Falco tinnunculus*
14	Eurasian Hobby	*Falco subbuteo*
15	Chukar Partridge	*Alectoris chukar*
16	Common Quail	*Coturnix coturnix*
17	Himalayan Snowcock	*Tetraogallus himalayensis*
18	Common Moorhen	*Gallinula chloropus*
19	Common Sandpiper	*Actitis hypoleucos*
20	Tibetan Sandgrouse	*Syrrhaptes tibetanus*
21	Rock Pigeon	*Columba livia*
22	Hill Pigeon	*Columba rupestris*
23	Oriental Turtle-dove	*Streptopelia orientalis*
24	Common Cuckoo	*Cuculus canorus*
25	Eurasian Eagle-owl	*Bubo bubo*
26	Little Swift	*Apus affinis*
27	Common Swift	*Apus apus*
28	European Roller	*Coracias garrulus*
29	Common Hoopoe	*Upupa epops*
30	White-winged Pied Woodpecker	*Dendrocopos leucopterus*
31	Eurasian Skylark	*Alauda arvensis*
32	Crested Lark	*Galerida cristata*
33	Horned Lark	*Eremophila alpestris*

34	Hume's Short-toed Lark	*Calandrella acutirostris*
35	Lesser Short-toed Lark	*Calandrella rufescens*
36	Eurasian Crag-martin	*Ptyonoprogne rupestris*
37	Northern House-martin	*Delichon urbicum*
38	Barn Swallow	*Hirundo rustica*
39	Red-rumped Swallow	*Hirundo daurica*
40	Grey Wagtail	*Motacilla cinerea*
41	Citrine Wagtail	*Motacilla citreola*
42	White Wagtail	*Motacilla alba*
43	Rufous-backed Long-tailed	*Lanius schach erythronothus*
44	Southern Grey Shrike	*Lanius meridionalis*
45	Rufous Shrike	*Lanius phoenicuroides*
46	Brown Dipper	*Cinclus pallasii*
47	White-throated Dipper	*Cinclus cinclus*
48	Rufous-tailed Rock-thrush	*Monticola saxatilis*
49	Blue Rock-thrush	*Monticola solitarius*
50	Blue Whistling-thrush	*Myophonus caeruleus*
51	Bluethroat	*Luscinia svecica*
52	Common Nightingale	*Luscinia megarhynchos*
53	Little Forktail	*Enicurus scouleri*
54	Black Redstart	*Phoenicurus ochruros*
55	White- capped Redstart	*Chaimarrornis leucocephalus*
56	Isabelline Wheatear	*Oenanthe isabellina*
57	Northern Wheateat	*Oenanthe oenanthe*
58	Desert Wheatear	*Oenanthe deserti deserti*
59	Variable Wheatear	*Oenanthe picata*
60	Red-tailed Wheatear	*Oenanthe chrysopygia*
61	Pied Bushchat	*Saxicola caprata*
62	Common Stonechat	*Saxicola torquatus indicus*
63	Spotted Flycatcher	*Muscicapa striata*
64	Streaked Laughingthrush	*Trochalopteron lineatum*
65	Moustached Warbler	*Acrocephalus melanopogon*
66	Blyth's Reed-warbler	*Acrocephalus dumetorum*
67	Sulphur-bellied Warbler	*Phylloscopus griseolus*
68	Greenish Warbler	*Phylloscopus trochiloides*
69	Hume's Leaf-warbler	*Phylloscopus humei*
70	Eastern Orphean Warbler	*Sylvia crassirostris*
71	Common Whitethroat	*Sylvia communis*
72	Hume's Whitethroat	*Sylvia althaea*
73	Barred Warbler	*Sylvia nisoria*

74	Turkestan Tit	*Parus bokharensis*
75	Wallcreeper	*Tichodroma muraria*
76	Eastern Rock Nuthatch	*Sitta tephronota*
77	Brown Accentor	*Prunella fulvescens*
78	Rock Bunting	*Emberiza cia par*
79	White-capped Bunting	*Emberiza stewarti*
80	Red-headed Bunting	*Emberiza bruniceps*
81	Grey-necked Bunting	*Emberiza buchanani*
82	Fire-fronted Serin	*Serinus pusillus*
83	Twite	*Acanthis flavirostris*
84	Eurasian Goldfinch	*Carduelis carduelis*
85	Desert Finch	*Rhodospiza obsoleta*
86	Mongolian Finch	*Bucanetes mongolicus*
87	Crimson-winged Finch	*Rhodospiza sanguineus*
88	Common Rosefinch	*Carpodacus erythrinus*
89	Spotted Great Rosefinch	*Carpodacus severtzovi*
90	Blyth's Rosefinch	*Carpodacus grandis*
91	House Sparrow	*Passer domesticus*
92	Eurasian Tree Sparrow	*Passer montanus*
93	Spanish Sparrow	*Passer hispaniolensis*
94	Rock Sparrow	*Petronia petronia*
95	Indian Golden Oriole	*Oriolus kundoo*
96	Common Starling	*Sturnus vulgaris*
97	Common Myna	*Acridotheres tristis*
98	Red-billed Chough	*Pyrrhocorax pyrrhocorax*
99	Alpine Chough	*Pyrrhocorax graculus*
100	Carrion Crow	*Corvus corone*
101	Common Raven	*Corvus corax tibetanus*
102	Eurasian Magpie	*Pica pica*